

Application No. 09/414,483  
Amendment dated August 13, 2003  
Reply to Office Action of June 3, 2003

### REMARKS/ARGUMENTS

The Examiner's indication that claims 24-28 are allowed is noted with appreciation. This opportunity has been taken to correct the dependencies of claims 25 through 27.

By the present amendment, the remaining claims in the application have been canceled and replaced by new claims 29 through 46 to distinguish over the cited references as discussed below.

By way of background information, it is mentioned that following the earthquake which occurred in San Francisco a few years ago, when a number of wood frame buildings collapsed due to failure of the framing at the ground floor level, considerable effort has been diverted to the strengthening of wood frame structures. These efforts have included the use of various types of metal corner connectors and holdowns and metal reinforcement rods.

In contrast, the present inventor has conceived the novel idea of strengthening wood frame structures not by the use of metal connectors or other reinforcements but by providing a reinforcement skin of composite material adhering to one side of the wood frame structures and to a foam material inserted into the wood frame structures.

More particularly, as illustrated in the drawings of the present application, the present invention provides, on one side of a rectangular frame of lumber components, a reinforcement layer 26. This layer 26 extends over and adheres to the lumber at one side of the structure and also extends over the opening formed between the lengths of lumber and adheres to a foam material within the frame.

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The foam material, to which the reinforcement skin adheres, serves to support the reinforcement skin against loss of stability by buckling out of the plane of the reinforcement skin in response to compression forces acting on the reinforcement skin when the frame is subjected to racking forces.

To counteract racking forces, therefore, the present invention provides a combination of the following features:-

- a. A frame of lumber components;
- b. A foam material in the frame;
- c. A reinforcement skin on one side of the frame; and
- d. The reinforcement skin adheres to the foam material and to the frame at that side of the frame.

In the Official Action under reply, claims 1-5 were rejected under 35 USC 103 (a) as being unpatentable over HOWARD in view of GINSBERG or GINSITE.

But, none of these references offers the slightest suggestion of reinforcing a frame by a composite material reinforcement skin adhering to one side of the frame and to a foam material in the frame.

Thus, HOWARD shows a wood frame structure provided, at one side, with a mesh 20, of common "chicken-wire" or other wire mesh, which is stapled or otherwise secured to the outside of frame 10 (column 2, lines 19 through 21). In Figure 2, staples 25 are shown securing this mesh 20. A plaster finish layer 27 is provided on this mesh 20 between the lengths of lumber forming the wood frame structure.

*no it's not the try 1 mesh to plaster 27 is over wood*

The plaster finish layer 27 is provided within the frame, unlike the present reinforcement skin, which is not provided within the frame but on one side of the frame.

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It is clearly apparent that the plaster finish layer 27, which is obviously inherently weak and requires the mesh 20 to support it, is in no way intended to reinforce the wood frame structure, but is merely a finish layer of the type that has been provided in building structures for centuries and which traditionally has been applied onto lathing.

In other words, the plaster finish layer 27 requires the mesh 20 to reinforce it, and the plaster finish layer 27 does not reinforce the timber framework and, therefore, cannot possibly be a reinforcement skin on the timber.

In fact, all that HOWARD discloses is a mesh of chicken wire nailed to a post and beam building structure and supporting the plaster layer. It is therefore submitted, with respect, that it would be absurd to argue that this reference teaches any means, other than the post and beam structure itself, for counteracting racking forces or reinforcing against such forces.

The HOWARD reference, therefore, is completely devoid of any suggestion of the provision of a reinforcement skin on one side of a wood frame structure to reinforce the wood frame structure against racking forces.

The Examiner's allegation that "HOWARD discloses the basic claimed building component except for the composite specifically being a "fiber reinforced composite" is, therefore, respectfully but very strongly denied.

The Examiner's allegation that "HOWARD discloses.....a reinforcing sheet of a composite (27) adhered to the lumber (22) to form a skin that resists distortion of the frame" is simply incorrect. The

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Col 2 lines 33-36  
plaster finish layer (27) does not adhere to the lumber to form a skin that resists distortion, but is merely a very, very weak finish layer which requires the mesh (20) to support it.

*When reinforced by mesh yes it is*  
A plaster layer cannot reasonably be regarded as a reinforcement layer. It is merely a finish layer, which itself requires to be supported. It has negligible tensile strength.

*Not claimed*

The Examiner further alleges "it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the building component of HOWARD with the fiber reinforced covering of either GINSBERG or GINSITE in order to provide the structure with a lightweight, durable and water resistant exterior covering that is also high strength and attractive in appearance".

*not used for frame structure only for composite material.*  
However, GINSBERG also offers not the slightest suggestion of the present concept of reinforcing a frame structure by a reinforcement skin adhered to one side of the frame structure.

*(It is water water comp.)*  
The Examiner has referred, specifically, to "GINSBERG, column 1, lines 49-51", but this passage merely refers to "wall coverings exterior and interior", and offers not the slightest suggestion of how such coverings should be applied to a frame structure.

*not claimed*

Since the conventional method of securing a cladding or a siding to a wood frame is by the use of nails or staples, this would be the obvious way to secure the GINSBERG panels to HOWARD'S frame, but there is no suggestion in either reference that such panels, or GINSITE, should be used as a frame reinforcement or that it should be adhered to one side of a frame for that purpose.

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It is, with respect, pointed out that, even after repeated attempts, neither this Examiner nor her predecessor in the original application has been able to cite any single reference or combination of references which in any way suggests the present novel and advantageous concept of adhering a reinforcement skin to at least one side of a lumber frame and to a foam material in the frame so as to reinforce the lumber frame, against racking forces.

The applicant therefore respectfully submits herewith new claims 29, 37 and 44 with a view to more clearly reciting the novel features of the present invention so as to distinguish over the applied prior art.

Thus, claim 29 recites a building component comprising lengths of lumber connected together to form a rectangular frame around an opening and "a reinforcement skin of solidified composite material adhering to said lengths of lumber and to said foam material at one side of said frame, said reinforcement skin extending over said lengths of lumber at said one side of said frame..., whereby said rectangular frame is reinforced by said reinforcement skin against the action of racking forces on said rectangular frame."

Likewise, new claim 37, which is directed to a method of making a building component, recites the step of "applying a coating of liquid composite material to one side of said frame and to the foam material and allowing said composite material to solidify in adherence with said lengths of lumber and said foam material at said one side of said frame to form a reinforcement skin extending over said lengths of lumber at said one side of said frame.....so as to reinforce said rectangular frame against racking forces."

Claim 44 is similar to claim 37 but also recites that the foam material is injected into the opening.

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Having regard to the above discussion, it is respectfully submitted that these features recited in claims 29, 37 and 44 clearly and patentably distinguish these claims over the applied HOWARD and GINSBERG references and GINSITE.

New claims 30 and 32 recite the overlapping and adherence of the reinforcement skin to the periphery and to an opposite side of the frame, thereby increasing the strength of attachment of the reinforcement skin to the frame, and claim 31 recited adherence to the periphery. There is not the slightest suggestion of these features in the applied prior art.

New claim 33 recites that "said composite material is reinforced with fiber", and new claim 34 recites "a fiber mesh reinforcing said composite material". The Examiner has alleged that the use of fiber reinforcement in a composite material for covering walls etc. is taught by GINSBERG, but, as discussed above, GINSBERG fails to offer any suggestion of adherence of composite material to a frame so as to form a reinforcement skin on the frame.

Claims 35 and 36 are directed to the inclusion of metal corner connectors in the building component of claim 29 and, therefore, it is submitted that claims 36 and 37 are likewise patentably distinguished over the Examiner's suggested combination of the above-discussed prior art in view of the HIESBERGER reference.

In addition, these claims recite corner connectors having "a box-shaped sections", with the "lengths of lumber having ends thereof in abutment with said box-shaped sections, and said corner connectors including flanges extending along said lengths of lumber from said box-shaped sections". There is no suggestion of these novel features of the corner connectors in the HIESBERGER reference, and

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in particular this reference fails to suggest the present arrangement of the ends of lumber abutting against a box-shaped section of a corner connector.

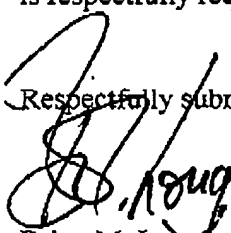
The Examiner has suggested that, in this reference, the connector 200 is box-shaped, but this is respectfully denied, since the walls 213, 240 and 250 in this reference do not form a box but a shape which is open at three sides. Furthermore, the lumber does not abut the non-box-shaped structure formed by these three walls.

Claims 38 through 43 depend from the method claim 37, and claims 45 and 46 depend from method claim 44, and further distinguish, in a manner similar to that discussed above with reference to claims 13 to 36, from the applied prior art.

It is therefore respectfully submitted that new claims 29 through 44 clearly and patentably distinguish over the prior art references, whether considered individually or in combination.

It is believed that the application is therefore fully in order for allowance, and early action to that end is respectfully requested.

Respectfully submitted,

  
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